UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JANAKIRAMAN VAIDYANATHAN

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Appeal 2009-009958
Application 10/738,403
Technology Center 2600

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Before MARC S. HOFF, THOMAS S. HAHN, and
ELENI MANTIS MERCADER, *Administrative Patent Judges.*

MANTIS MERCADER, *Administrative Patent Judge.*
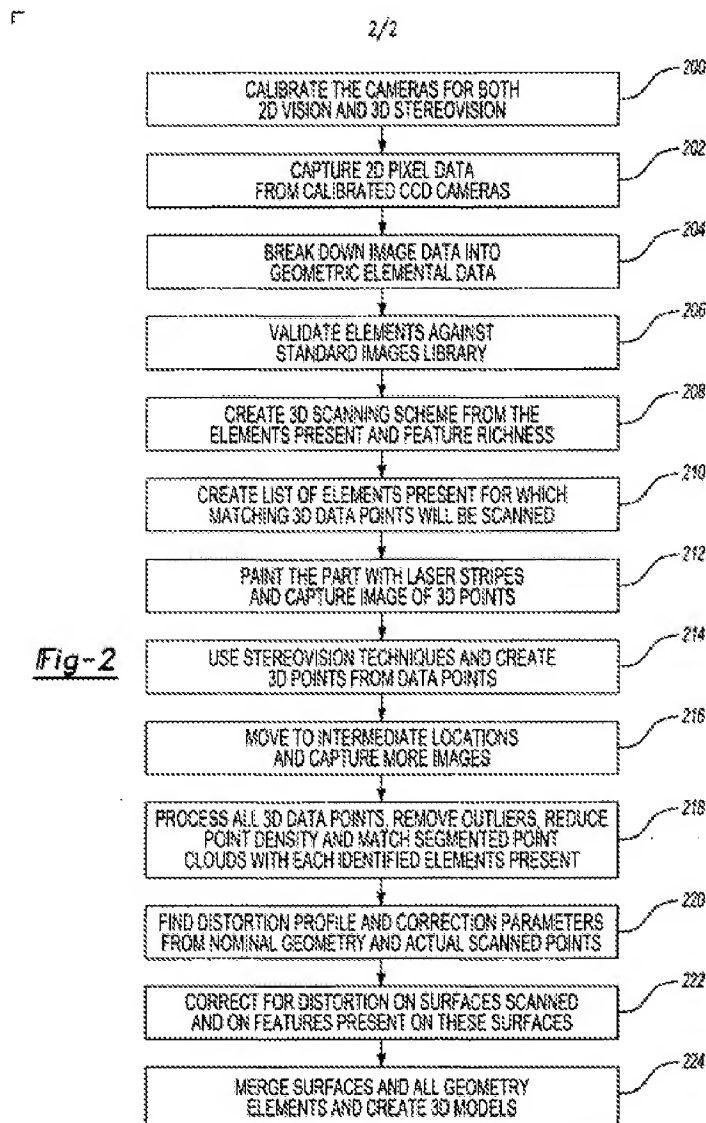
DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the final rejection of claims 1-16. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

INVENTION

Appellant's Figure 2 is reproduced below:

Fig-2

Appellant's Figure 2 and claimed invention are directed to a three dimensional (3D) object modeling system and method where two dimensional (2D) geometric elements are used in conjunction with scanned 3D images to generate a model of an object (Spec. ¶ [20]). An image grabber captures a 2D representation of the object to be modeled (step 202). An image processor breaks the 2D image into its geometric elements (step 204). A 3D scanner scans the object to create a 3D stereoscopic image (step 212). The 3D stereoscopic image is fitted to the geometric elements generated from the 2D image to generate the model (step 218). The fitting of the 3D image with the geometric elements creates a more precise 3D CAD model and reduces the processing resources used to generate the 3D image (Spec. ¶ [28]). *See* Figs. 1-2; Spec. ¶ [8]; Abstract.

Claim 1, reproduced below, is representative of the subject matter on appeal (emphasis added):

1. A modeling system for modeling an object, comprising:
    at least one camera;
    an image grabber that captures a two dimensional (2D) image of the object;
    a scanner that scans the object to create a three dimensional (3D) image of the object; and
    at least one image processor that breaks the 2D image into geometric elements and *matches the scanned 3D image with the geometric elements* to generate the model.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Horikawa	US 4,638,156	Jan. 20, 1987
Nasar	US 5,144,685	Sep. 1, 1992

Shashua	US 5,821,943	Oct. 13, 1998
Migdal	US 5,995,650	Nov. 30, 1999

Johnny Park et al., *Dual-Beam Structured-Light Scanning for 3-D Object Modeling*, THIRD INT'L CONF. ON 3-D DIGITAL IMAGING & MODELING 65 (2001).

Fabio Remondino, *3-D Reconstruction of Articulated Objects from Uncalibrated Images*, 4661 SPIE ELEC. IMAGING 148 (2002).

The following rejections are before us for review:

1. The Examiner rejected claims 1-3, 5, 7-10, and 12-14 under 35 U.S.C. § 103(a) as being unpatentable over Shashua in view of Park.

2. The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Shashua in view of Park and further in view of Nasar.

3. The Examiner rejected claims 6 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Shashua in view of Park and further in view of Migdal.

4. The Examiner rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Shashua in view of Park and in further view of Horikawa.

5. The Examiner rejected claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Shashua in view of Park and further in view of Remondino.

ISSUES

The pivotal issues are:

1. Whether Appellant has shown that the Examiner erred in determining that the combination of Shashua and Park teaches or suggests

the limitation of "at least one image processor that . . . *matches the scanned 3D image* with the geometric elements to generate the model" as recited in claim 1 (emphasis added).

2. Whether Appellant has shown that the Examiner erred in concluding that it would have been obvious to combine Shashua with Park to meet the limitations of independent claims 1 and 9.

PRINCIPLES OF LAW

The Examiner's articulated reasoning in the rejection must possess a rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). The Supreme Court, quoting *Kahn*, stated that "'[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

ANALYSIS

1. Does the combination of Shashua and Park teach or suggest the limitation of "at least one image processor that . . . matches the scanned 3D image with the geometric elements to generate the model" as recited in claim 1?

Appellant argues (Br. 6), *inter alia*, that the combination of Shashua and Park does not disclose or suggest the limitation of "at least one image processor that . . . *matches the scanned 3D image* with the geometric elements to generate the model" as recited in claim 1 (emphasis added).

We agree with Appellant. As the Examiner recognized (Ans. 4), Shashua does not disclose "a scanner that scans the object to *create a three*

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dimensional (3D) image of the object" (emphasis added). The 3D
representation described in Shashua is not a *scanned* 3D image, but a 3D
representation or reconstructed image based on views of the 3D object (*see*
col. 1, ll. 29-38; col. 2, ll. 17-36). The Examiner relies (Ans. 11) on Shashua
(col. 5, ll. 66-67) for matching a scanned 3D image with the geometric
elements. This section of Shashua describes the geometrical relation of the
2D image points with the set of 3D points to reconstruct a 3D image (col. 6,
ll. 1-18). Thus, at this stage there is no 3D image created. Accordingly, we
agree with Appellant (Br. 6) that Shashua does not teach matching of the 3D
image with geometric elements/points, let alone matching a 3D scanned
image with geometric elements as recited in claim 1.

*2. Would it have been obvious to combine Shashua with Park to meet the
limitations of claims 1and 9?*

Appellant argues (Br. 7) that the rationale provided by the Examiner
to combine Shashua and Park does "not provide any reason as to why
anyone would make the proposed combination."

The Examiner finds (Ans. 4) that "[i]t would have been obvious to
one of ordinary skill in the art to apply 'a Dual-Beam structured-light
scanner to scan the object used for 3D object modeling' taught by Park to
improve Shashua's invention for the predictable result of enabling 3D object
modeling" (citations omitted) (*see also* Ans. 12).

We find the Examiner's stated motivation to be conclusory in nature
and lacking any articulated reasoning with some rational underpinning to
support the combination of Shashua and Park to meet the independent claims
1 and 9 limitations. *See KSR*, 550 U.S. at 418. The Examiner has not
articulated why an ordinarily skilled artisan would recognize that a scanned
3D image would enhance 3D object modeling.

Accordingly, Appellant has shown error in the Examiner's rejections of independent claim 1 and independent claim 9 that has similar limitations as claim 1. We will also reverse the rejections of the dependent claims 2-8 and 10-16.

CONCLUSIONS

1. Appellant has shown that the Examiner erred in determining that the combination of Shashua in view of Park teaches or suggests the limitation of "at least one image processor that . . . matches the scanned 3D image with the geometric elements to generate the model" as recited in claim 1.

2. Appellant has shown that the Examiner erred in concluding that it would have been obvious to combine Shashua with Park to meet the limitations of claim 1.

ORDER

The decision of the Examiner to reject claims 1-16 is reversed.

REVERSED

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